

# *Math650-600: Several Complex Variables*

Fall 2009; TR 11:10-12:25 BLOC 624

Professor Emil J. Straube

This course presents an introduction, at the advanced graduate level, to *function theory in several complex variables*, with an emphasis on the analytic and partial differential equations aspects of the subject.

A *list of topics* is as follows:

- *Holomorphic functions of several complex variables*: holomorphic functions, the  $\bar{\partial}$  equation, function theory in polydiscs, power series, extension phenomena, the Bochner-Martinelli formula, biholomorphic maps
- *Pseudoconvexity and domains of holomorphy*: plurisubharmonic functions, pseudoconvex domains, domains of holomorphy, Levi pseudoconvexity, the convexity theory of Cartan - Thullen, characterizations of pseudoconvexity
- *$\mathcal{L}^2$ -methods, solution of the Levi problem*: the Hilbert space formalism of the  $\bar{\partial}$  problem,  $\mathcal{L}^2$ -estimates, Runge's theorem in several variables, an existence theorem in pseudoconvex domains, solution of the Levi problem

*Prerequisites* are the elements of real, complex, and functional analysis, Math 607-608, Math 617-618, or equivalent, or approval of instructor.

*Office hours*: TR 2:00-3:30, but feel free to check at any time.

*Text*: There is no required text. References to various texts will be provided for the different portions of the course.

*Grading policy*: Your grade will be based on three take-home exams.